

**SOUTH BLACKBIRD CREEK
WBID 655**

Recreational Use Attainability Analysis

May 2007

PREPARED FOR:
RFP No: B3Z07134
Water Quality Monitoring & Assessment Section
Water Protection Program
Division of Environmental Quality
MISSOURI DEPARTMENT OF NATURAL RESOURCES
P O Box 176
Jefferson City, MO 65102

PREPARED BY:
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1123 Wilkes Blvd., Ste. 400
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Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	South Blackbird Creek
Missouri Water Body Identification (WBID) Number:	655
8-digit HUC:	10280201
County:	Putnam
Upstream Legal Description (from Table H):	18, 65 N, 18 W
Downstream Legal Description (from Table H):	2, 64 N, 17 W
Number of sites evaluated	7
List all sites numbers, listed cnsquently upstream to downstream:	site 7 site 5 site 3 site 1 site 6 site 4 site 2

II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates:		Downstream Coordinates:	
UTM X	Y	UTM X	Y
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

III. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):	Unionville Country Club
Discharger Permit Number(s):	MO 0026646

IV. UAA Surveyor (please print legibly)

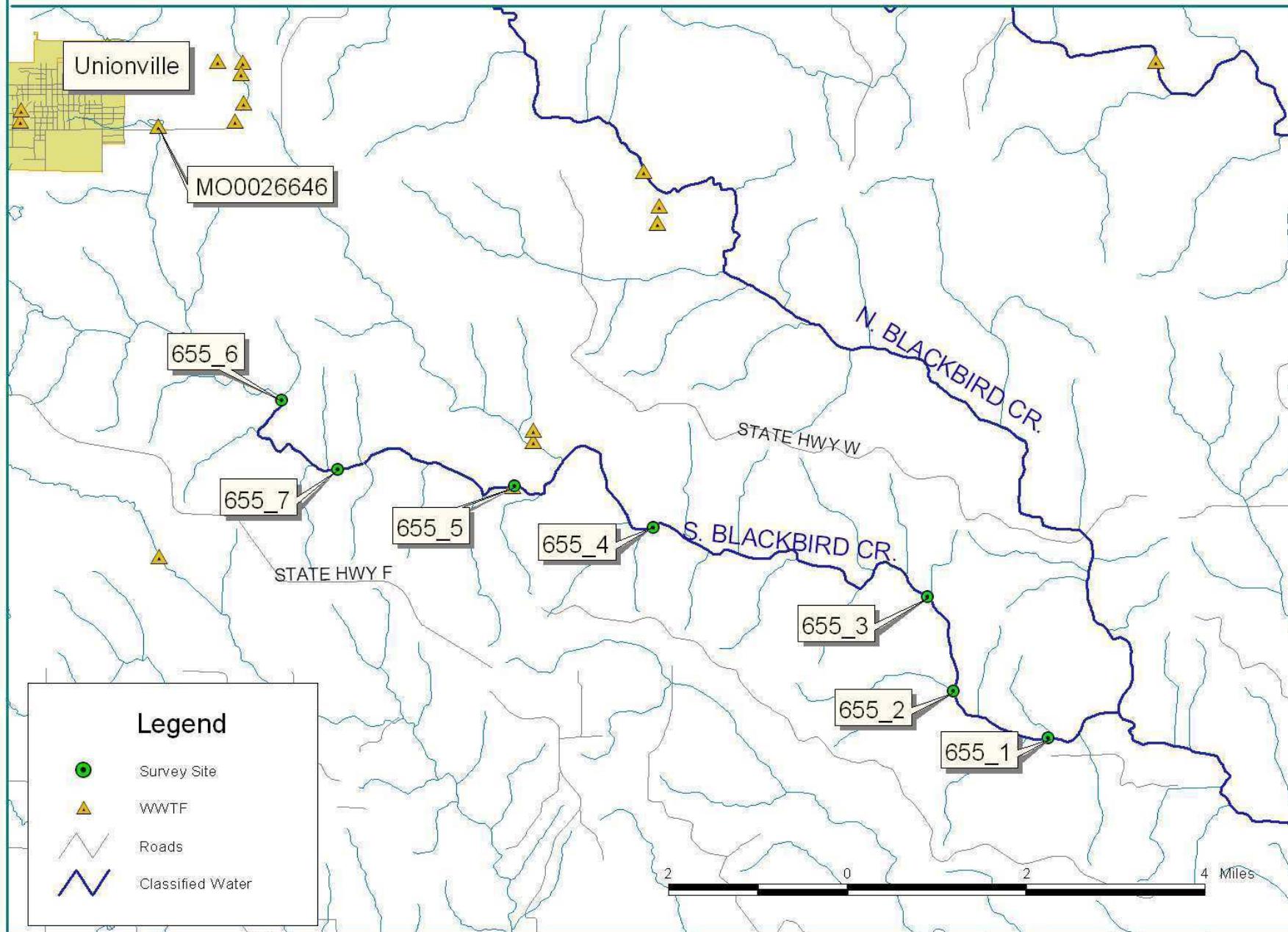
Name of Surveyor	Telephone Number: (573) 443-4100
Organization/Employer: MFC Water Resources	
Position:	

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Neil Muench Date: 5/21/07

Ar 5/25/07

S. Blackbird Creek (0655), Length = 13.0 mi., Permit # MO0026646



WBID# 655
 Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/24/07 8:45</u>	Site Location Description (e.g., road crossing): <u>Oak Trail Crossing</u>
Personnel (Data Collectors): <u>Nick Muenks, Jarrod R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0517457</u>		Y: <u>4469286</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>88</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-1-757</u>	<u>Looking Downstream at T5</u>		
<u>655-1-758</u>	<u>Upstream at T5</u>		
<u>655-1-759</u>	<u>Upstream at T5</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign *	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: Purple paint on fence

WBID# 655
Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments: <u>None</u>					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<u>30</u>			
RUN			<u>20</u>			
POOL			<u>50</u>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>0</u> % Cobble	<u>10</u> % Gravel	<u>50</u> % Sand	<u>30</u> % Silt	<u>10</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None observed

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Munk Date of Survey: 5/21/07

Organization: MEL Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>1</u> (WBID_Site#)	Dissolved Oxygen	
Estimated Channel Incision: <u>0.4</u> ^{9m} (m) (height between low bank width and water)	GPS Location (taken at transect 1):	Date: <u>5/17/07</u>	Time: <u>842</u>
UTM X: <u>0517457</u>	UTM Y: <u>4469286</u>	Dissolved Oxygen: <u>9.15</u> (mg/L)	
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 88</u> (feet)		Dissolved Oxygen: <u>95.7</u> (% sat)	
Average Stream Width: <u>8.5</u> (meters)	Length of Survey Segment: <u>190</u> (meters) (20x average stream width)	Specific Cond: <u>523</u> (µS/cm)	
Field Staff: <u>Nick Muenks</u> <u>Jared Roberts</u>		Water Temperature: <u>17.9</u> (°C)	

Transect Cross-Section																						
Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.20	0.12	0.00	0.11	0.00	0.17	0.20	0.12	0.20	0.11	0.20	0.10	0.00	0.13	1.00	0.11	0.40	0.12	0.70	0.10	0.00	0.12
2	1.15	0.20	1.25	0.30	1.00	0.78	1.25	0.59	1.38	0.10	1.30	0.17	0.21	0.17	1.60	0.12	0.90	0.15	1.75	0.15	0.48	0.36
3	2.10	0.25	2.50	0.20	2.00	0.79	2.30	0.66	2.56	0.16	2.40	0.13	0.42	0.19	2.20	0.16	1.40	0.17	2.80	0.15	0.96	0.33
4	3.05	0.30	3.75	0.31	3.00	0.70	3.35	0.60	3.74	0.14	3.50	0.10	0.63	0.19	2.80	0.20	1.90	0.20	3.85	0.10	1.44	0.29
5	4.00	0.44	5.00	0.38	4.00	0.62	4.40	0.58	4.92	0.10	4.60	0.10	0.84	0.20	3.40	0.24	2.40	0.47	4.90	0.10	1.92	0.30
6	4.95	0.68	6.25	0.45	5.00	0.53	5.45	0.50	6.10	0.10	5.70	0.10	1.05	0.19	4.00	0.25	2.90	0.55	5.95	0.00	2.40	0.30
7	5.90	0.72	7.50	0.50	6.00	0.48	6.50	0.40	7.28	0.00	6.80	0.10	1.26	0.18	4.60	0.10	3.40	0.58	7.00	0.00	2.88	0.26
8	6.85	0.66	8.75	0.52	7.00	0.38	7.55	0.33	8.46	0.00	7.90	0.10	1.47	0.10	5.20	0.10	3.90	0.57	8.05	0.00	3.36	0.21
9	7.80	0.59	10.00	0.57	8.00	0.31	8.60	0.30	9.64	0.32	9.00	0.10	1.68	0.15	5.80	0.11	4.40	0.53	9.10	0.10	3.84	0.20
10	8.75	0.58	11.25	0.54	9.00	0.16	9.65	0.20	10.82	0.10	10.10	0.10	1.89	0.12	6.40	0.14	4.90	0.55	10.15	0.13	4.32	0.13
11	9.70	0.11	12.50	0.11	14.00	0.10	10.70	0.12	12.00	0.11	11.20	0.11	2.10	0.10	7.00	0.10	5.40	0.12	11.20	0.26	4.80	0.13
12	9.80	0	12.70	0	11.30	0	11.30	0	14.20	0	11.40	0	7.70	0	7.20	0	5.50	0	11.30	0	5.10	0
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		riffle		riffle		run/riffle		run		pool		riffle		run	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07

AK 5/25/07

WBID# 655
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/21/07 10:00</u>	Site Location Description (e.g., road crossing): <u>Helmlock Rd crossing</u>
Personnel (Data Collectors): <u>Nick Muenkes Jerrod R.</u>	
Current Weather Conditions: <u>Clear</u>	Facility Name: <u>Unzuville Country Club</u>
	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0515752</u>		Y: <u>4470125</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>32.2</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-2-760</u>	<u>Foot prints at site 2</u>		
<u>655-2-761</u>	<u>Downstream view from Transect 1</u>		
<u>655-2-762</u>	<u>Downstream view from Transect 1</u>		
<u>655-2-763</u>	<u>upstream view from Transect 1</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments:				

WBID# 655
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>20</i>			
RUN			<i>40</i>			
POOL			<i>40</i>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.) *acc*

<i>0</i> % Cobble	<i>2</i> % Gravel	<i>60</i> % Sand	<i>45</i> % Silt	<i>3</i> % Mud/Clay	<i>0</i> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

No vegetation or algae in wetted width. - same as

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Mick Placent Date of Survey: 5/24/07

Organization: MEL Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>		Site #: <u>2</u> (WBID_Site#)		Dissolved Oxygen	
Estimated Channel Incision: <u>0.70</u> (m) (height between low bank width and water)		GPS Location (taken at transect 1): UTM X: <u>0515752</u> UTM Y: <u>4470125</u>		Date: <u>5/21/07</u>	Time: <u>10:30</u>
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 32.2</u> (feet)				Dissolved Oxygen: <u>8.65</u> (mg/L)	
Average Stream Width: <u>7</u> (meters)	Length of Survey Segment: <u>150</u> (meters) (20x average stream width)			Dissolved Oxygen: <u>93.9</u> (% sat)	
Field Staff: <u>Nick Muenks</u> <u>Jerrold Roberts</u>				Specific Cond: <u>607</u> ($\mu\text{S}/\text{cm}$)	
				Water Temperature: <u>19.1</u> ($^{\circ}\text{C}$)	

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.70	0.10	1.60	0.10	0.50	0.10	0.30	0.12	2.90	0.10	0.10	0.10	1.20	0.28	0.70	0.11	0.50	0.10	0.30	0.12	0.00	0.10
2	1.23	0.10	1.85	0.10	1.28	0.10	0.70	0.12	1.45	0.17	0.92	0.11	1.95	0.51	1.33	0.32	1.00	0.12	0.91	0.18	0.68	0.35
3	1.76	0.10	2.10	0.12	2.06	0.10	1.10	0.14	2.00	0.16	1.74	<0.10	2.70	0.57	1.96	0.31	1.50	0.19	1.52	0.25	1.36	0.35
4	2.29	0.13	2.35	0.15	2.84	0.10	1.50	0.14	2.55	0.15	2.56	<0.10	4.65	0.72	2.59	0.23	2.00	0.23	2.13	0.26	2.04	0.34
5	2.82	0.13	2.60	0.19	3.62	0.10	1.90	0.13	3.10	0.13	3.38	<0.10	6.60	0.71	3.22	0.20	2.50	0.27	2.74	0.30	2.72	0.33
6	3.35	0.15	2.85	0.20	4.40	0.10	2.30	0.15	3.65	0.12	4.20	<0.10	8.55	0.70	3.85	0.20	3.00	0.29	3.35	0.30	3.40	0.28
7	3.88	0.10	3.10	0.21	5.18	<0.10	2.70	0.17	4.20	0.10	5.02	<0.10	10.50	0.74	4.48	0.18	3.50	0.32	3.96	0.30	4.08	0.25
8	4.41	<0.10	3.35	0.22	5.96	<0.10	3.10	0.17	4.75	0.11	5.84	<0.10	12.45	0.65	5.11	0.20	4.00	0.33	4.57	0.31	4.76	0.18
9	4.94	<0.10	3.60	0.25	6.74	<0.10	3.50	0.17	5.30	0.10	6.66	0.10	14.40	0.57	5.74	0.17	4.50	0.35	5.18	0.31	5.44	0.19
10	5.47	0.10	3.85	0.25	7.52	0.10	3.90	0.15	5.85	0.12	7.48	<0.10	16.35	0.50	6.37	0.19	5.00	0.35	5.79	0.29	6.12	0.17
11	6.00	0.12	4.10	0.19	8.30	0.10	4.30	0.10	6.40	0.20	8.30	0.10	18.30	0.11	7.00	0.12	5.50	0.14	6.40	0.28	6.80	0.11
12	6.80	0	4.30	0	8.60	0	6.00	0		0	8.50	0			8.00	0	5.70	0	6.50	0		
Feature Type (riffle, run, or pool)	80 riffle		20 run		30 run		170 run		run		20 riffle		pool		100 pool		20 pool		10 pool		pool	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muehl Date: 5/21/07
 BWC 5-23-07 AK 5/25/07

WBID# 655
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Date & Time: <u>5/21/07 1045</u>	Site Location Description (e.g., road crossing): <u>Olive Run Trail crossing</u>
Personnel (Data Collectors): <u>Nick M, Jermol R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0515285</u>		Y: <u>4471818</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>16.2</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-3-764</u>	<u>Downstream view from T3</u>		
<u>655-3-765</u>	<u>Upstream view from T3</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments:

WBID# 655
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<u>30</u>			
RUN			<u>50</u>			
POOL			<u>20</u>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>2</u> % Cobble	<u>3</u> % Gravel	<u>65</u> % Sand	<u>20</u> % Silt	<u>10</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

few aquatic plants

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muench Date of Survey: 5/21/07
Organization: MEC Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>	Site #: <u>3</u> (WBID_Site#)	Dissolved Oxygen
Estimated Channel Incision: <u>0.35</u> (m) (height between low bank width and water)		Date: <u>5/21/07</u> Time: <u>1045</u>
GPS Location (taken at transect 1): UTM X: <u>0515285</u> UTM Y: <u>4471818</u> → <u>Transect 8 near bridge</u>		Dissolved Oxygen: <u>9.84</u> (mg/L)
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/-116.2</u> (feet)		Dissolved Oxygen: <u>107.6</u> (% sat)
Average Stream Width: <u>7</u> (meters)	Length of Survey Segment: <u>150</u> (meters) (20x average stream width)	Specific Cond: <u>622</u> (µS/cm)
Field Staff: <u>Nick Muenks</u> <u>Jerrod Roberts</u>		Water Temperature: <u>19.7</u> (°C)

Transect Cross-Section																						
Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.60	0.10	0.50	0.11	0.00	0.22	0.20	0.13	0.30	0.15	3.40	0.10	0.00	0.11	5.40	0.10	2.50	0.11	0.30	0.20	0.20	0.12
2	1.25	0.10	1.20	0.10	0.25	0.30	0.74	0.16	0.86	0.15	3.70	0.11	0.65	0.28	5.80	0.11	2.91	0.12	1.06	0.35	1.10	0.50
3	1.90	0.17	1.90	0.15	0.50	0.31	1.28	0.17	1.42	0.16	4.00	0.13	1.30	0.17	6.20	0.13	3.32	0.16	1.82	0.11	2.00	0.64
4	2.55	0.17	2.60	0.14	0.75	0.30	1.82	0.12	1.98	0.11	4.30	0.18	1.95	0.15	6.60	0.16	3.73	0.17	2.58	0.11	2.90	0.57
5	3.20	0.16	3.30	0.12	1.00	0.28	2.36	0.13	2.54	0.17	4.60	0.18	2.60	0.13	7.00	0.19	4.14	0.17	3.34	0.10	3.80	0.49
6	3.85	0.23	4.00	0.12	1.25	0.25	2.90	0.16	3.10	0.17	4.90	0.20	3.25	0.15	7.40	0.25	4.55	0.15	4.10	0.10	4.70	0.33
7	4.50	0.23	4.70	0.13	1.50	0.22	3.44	0.20	3.66	0.18	5.20	0.21	3.90	0.11	7.80	0.25	4.96	0.13	4.86	0.10	5.60	0.25
8	5.15	0.31	5.40	0.28	1.75	0.20	3.98	0.23	4.22	0.21	5.50	0.23	4.55	0.12	8.20	0.23	5.37	0.12	5.62	0.00	6.50	0.30
9	5.80	0.32	6.10	0.27	2.00	0.18	4.52	0.26	4.78	0.20	5.80	0.20	5.20	0.11	8.60	0.20	5.78	0.10	6.38	0.00	7.40	0.34
10	6.45	0.37	6.80	0.30	2.25	0.15	5.06	0.24	5.34	0.21	6.10	0.13	5.85	0.13	9.00	0.24	6.19	0.15	7.14	0.10	8.30	0.39
11	7.10	0.20	7.50	0.15	2.50	0.10	5.60	0.15	5.90	0.19	6.40	0.10	6.50	0.12	9.40	0.13	6.60	0.16	7.90	0.22	9.20	0.28
12	7.30	0	7.90	0	6.20	0	5.80	0	6.00	0			6.80	0			6.90	0			9.40	0
Feature Type (riffle, run, or pool)	pool		run		run/riffle		run		run		riffle/run		run		run		run		run		pool	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muenks Date: 5/21/07
Or WC 5-23-07 5/25/07

WBID# 655
Site# 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Date & Time: <u>5/21/07 1145</u>	Site Location Description (e.g., road crossing): <u>Maywood Trl crossing</u>
Personnel (Data Collectors): <u>Nick M. Jernick</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>6510347</u>		Y: <u>4473062</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>20.9</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID_Site#_##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-4-766</u>	<u>Foot prints in stream at site 4</u>	<u>655-4-769</u>	<u>Downstream view from transect 11</u>
<u>655-4-767</u>	<u>Downstream view from transect 1</u>	<u>655-4-770</u>	<u>Upstream view from transect 11</u>
<u>655-4-768</u>	<u>Upstream view from transect 1</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign ⁺	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: purple paint on fence posts

WBID# 655
Site# 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization
(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<u>1/2 of site</u>			
RUN			<u>60</u>			
POOL			<u>40</u>			
			<u>0</u>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>1</u> % Cobble	<u>4</u> % Gravel	<u>60</u> % Sand	<u>20</u> % Silt	<u>15</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None observed

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muenks Date of Survey: 5/21/07

Organization: MEL Water Resources Position: Water Quality Scientist

AKC 5-23-07
AKC 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u> Site #: <u>4</u> (WBID_Site#)		Dissolved Oxygen Date: <u>5/21/07</u> Time: <u>1145</u>	
Estimated Channel Incision: <u>0.50</u> (m) (height between low bank width and water)		Dissolved Oxygen: <u>8.82</u> (mg/L)	
GPS Location (taken at transect 1): UTM X: <u>0510347</u> UTM Y: <u>4473062</u>		Dissolved Oxygen: <u>104.2</u> (% sat)	
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 20.9</u> (feet)		Specific Cond: <u>687</u> (µS/cm)	
Average Stream Width: <u>60</u> (meters) Length of Survey Segment: <u>150</u> (meters) (20x average stream width)		Water Temperature: <u>23.5</u> (°C)	
Field Staff: <u>Nick Muenks, Jerrad Roberts</u>			

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	1.20	0.11	2.00	0.10	0.00	<0.10	0.50	0.10	2.50	0.10	0.00	0.18	0.60	0.11	0.50	0.10	0.00	0.11	0.20	0.15	2.40	0.10
2	1.45	0.12	2.23	0.11	0.80	<0.10	0.20	<0.10	2.65	0.16	0.46	0.15	0.98	0.12	0.81	0.11	0.40	0.19	0.45	0.18	2.70	<0.10
3	1.70	0.11	2.46	0.15	1.60	<0.10	1.90	<0.10	2.80	0.16	0.92	0.11	1.36	0.12	1.12	0.10	0.80	0.15	0.70	0.15	3.00	0.10
4	1.95	0.11	2.69	0.16	2.40	<0.10	2.60	<0.10	2.95	0.15	1.38	0.12	1.74	0.16	1.43	<0.10	1.20	0.16	0.95	0.14	3.30	0.11
5	2.20	<0.10	2.92	0.22	3.20	<0.10	3.30	0.00	3.10	0.18	1.84	0.13	2.12	0.13	1.74	0.10	1.60	0.15	1.20	0.13	3.60	0.11
6	2.45	<0.10	3.15	0.16	4.00	<0.10	4.00	0.00	3.25	0.15	2.30	<0.10	2.50	0.14	2.05	0.11	2.00	0.20	1.45	0.15	3.90	0.12
7	2.70	0.10	3.38	0.18	4.80	<0.10	4.70	0.11	3.40	0.16	2.76	0.10	2.88	0.14	2.36	0.17	2.40	0.10	1.70	0.13	4.20	0.14
8	2.95	0.12	3.61	0.20	5.60	<0.10	5.40	0.10	3.55	0.14	3.22	0.10	3.26	0.13	2.67	0.17	2.80	<0.10	1.95	0.13	4.50	0.19
9	3.20	0.12	3.84	0.17	6.40	<0.10	6.10	<0.10	3.70	0.12	3.68	0.10	3.64	0.10	2.98	0.15	3.20	0.10	2.20	0.12	4.80	0.13
10	3.45	0.13	4.07	0.17	7.20	<0.10	6.80	<0.10	3.85	0.11	4.14	<0.10	4.02	0.12	3.29	0.18	3.60	0.10	2.45	0.12	5.10	0.15
11	3.70	0.13	4.30	0.18	8.00	<0.10	7.50	0.10	4.00	0.10	4.60	0.11	4.40	0.14	3.60	0.14	4.00	0.11	2.70	0.10	5.40	0.10
12	4.20	0					8.00	0	5.20	0	4.90	0			3.80	0	6.10	0	2.90	0	5.80	0
Feature Type (riffle, run, or pool)	riffle		run		riffle		⁵⁰ riffle		¹²⁰ riffle		³⁰ riffle		run		²⁰ run		²¹⁰ run/riffle		²⁰ run		⁴⁰ riffle	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muench Date: 5/21/07

BUC 5-23-05

p. 125
Down a yf

5/25/07

WBID# 655
Site# 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/21/07 1325</u>	Site Location Description (e.g., road crossing): <u>Hwy 129 crossing</u>
Personnel (Data Collectors): <u>Nick M., Jerrod R.</u>	
Current Weather Conditions: <u>Clear</u>	Facility Name: <u>Unionville Country Club</u>
	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0507861</u>		Y: <u>4473803</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>100</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-5-771</u>	<u>Downstream view from transect 5</u>		
<u>655-5-772</u>	<u>Upstream view from transect 5</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign *	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: * purple paint on fence, water gap was washed out

WBID# 655
Site# 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<u>10</u>			
RUN			<u>25</u>			
POOL			<u>65</u>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>1</u> % Cobble	<u>9</u> % Gravel	<u>70</u> % Sand	<u>15</u> % Silt	<u>5</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

None observed

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Phuent Date of Survey: 5/21/07

Organization: MEC Water Resources Position: Water Quality Scientist

Waterbody ID: <u>G55</u>	Site #: <u>5</u> (WBID_Site#)	Dissolved Oxygen	
Estimated Channel Incision: <u>0.15</u> (m) (height between low bank width and water)	Date: <u>5/21/07</u>	Time: <u>1325</u>	
GPS Location (taken at transect 1): UTM X: <u>0507861</u> UTM Y: <u>4473803</u>	Dissolved Oxygen: <u>9.83</u> (mg/L)		
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 100</u> (feet)	Dissolved Oxygen: <u>117.6</u> (% sat)		
Average Stream Width: <u>4.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (20x average stream width)	Specific Cond: <u>588</u> ($\mu\text{S/cm}$)		
Field Staff: <u>Nick Muenks Jerrad Roberts</u>	Water Temperature: <u>24.0</u> ($^{\circ}\text{C}$)		

Measurement		01		02		03		04		05		06		07		08		09		10		11		
		Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
1	1.10	0.13	0.30	0.11	0.00	0.14	0.20	0.11	1.00	0.11	1.30	0.11	1.10	0.10	0.00	0.12	0.00	>1.0	1.10	0.12	0.90	0.10		
2	1.36	0.12	0.81	0.20	0.45	0.57	0.50	0.31	1.25	0.13	1.57	<0.10	1.31	<0.10	0.25	0.12	0.80	>1.0	1.50	0.16	1.34	0.24		
3	1.62	0.11	1.32	0.25	0.90	0.59	0.80	0.38	1.50	0.16	1.84	<0.10	1.52	0.10	0.50	0.13	1.60	>1.0	1.90	0.16	1.78	0.34		
4	1.88	0.13	1.83	0.27	1.35	0.54	1.10	0.37	1.75	0.17	2.11	0.10	1.73	<0.10	0.75	0.12	2.40	0.99	2.30	0.19	2.22	0.38		
5	2.14	0.16	2.34	0.27	1.80	0.41	1.40	0.32	2.00	0.17	2.38	0.12	1.94	0.10	1.00	0.11	3.20	0.67	2.70	0.24	2.66	0.38		
6	2.40	0.15	2.85	0.31	2.25	0.32	1.70	0.25	2.25	0.17	2.65	0.13	2.15	0.10	1.25	0.13	4.00	0.44	3.10	0.27	3.10	0.39		
7	2.66	0.16	3.36	0.35	2.70	0.23	2.00	0.20	2.50	0.16	2.92	0.10	2.36	0.12	1.50	0.12	4.80	0.18	3.50	0.28	3.54	0.44		
8	2.92	0.17	3.87	0.34	3.15	0.23	2.30	0.17	2.75	0.15	3.19	0.12	2.57	0.11	1.75	0.11	5.60	0.11	3.90	0.31	3.98	0.42		
9	3.18	0.15	4.38	0.30	3.60	0.24	2.60	0.17	3.00	0.22	3.46	0.10	2.78	0.10	2.00	0.12	6.40	<0.10	4.30	0.12	4.42	0.23		
10	3.44	0.14	4.89	0.25	4.05	0.25	2.90	0.13	3.25	0.21	3.73	0.14	2.99	0.10	2.25	0.12	7.20	0.10	4.70	<0.10	4.86	0.14		
11	3.70	0.10	5.40	0.16	4.50	0.11	3.20	0.11	3.50	0.12	4.00	0.14	3.20	0.10	2.50	0.10	8.00	0.16	5.10	0.15	5.30	0.10		
12	4.70	0			5.00	0	3.70	0	3.70	0			5.60	0	5.00	0			6.60	0	5.70	0		
Feature Type (riffle, run, or pool)		run		pool		pool		pool		run		run		riffle		run		pool		pool		pool		

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muench Date: 5/21/07
BWC 5-23-07 AK 5/26/07

WBID# 655
 Site# 6

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Date & Time: <u>5/21/07 1430</u>	Site Location Description (e.g., road crossing): <u>Fern Trl crossing</u>
Personnel (Data Collectors): <u>Abek M., Jerrod R.</u>	Facility Name: <u>Unionville Country Club</u>
Current Weather Conditions:	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Site GPS Coordinates: UTM X: <u>0503677</u>	Y: <u>4475317</u>
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)	
Global Positioning System (GPS)	
Static Mode	<input checked="" type="checkbox"/>
Dynamic Mode (Kinematic)	
Precise Positioning Service	
Signal Averaging	
Real Time Differential Processing	
HORIZONTAL ACCURACY ESTIMATE	
GPS Data Quality	
FOM	± <u>1m</u> Meters
EPE	± <u>110</u> Feet or ± _____ Meters
PDOP	
Interpolation Data Quality	
Source Map Scale: 1:24,000 1:100,000 Other _____	
± _____ Feet or ± _____ Meters	

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-6-773</u>	<u>Footprints in stream</u>	<u>655-6-777</u>	<u>Downstream view transect 11</u>
<u>655-6-774</u>	<u>Downstream view transect 2</u>	<u>655-6-778</u>	<u>upstream view transect 11</u>
<u>655-6-775</u>	<u>Downstream view transect 2</u>		
<u>655-6-776</u>	<u>Upstream view transect 2</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input checked="" type="checkbox"/> No trespass sign ⁺	<input checked="" type="checkbox"/> Fence [*]	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: <u>* along stream, no water gaps present</u> <u>+ signs on fence near gates</u>				

WBID# 655
Site# 6

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>9% of site</i>	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<i>40</i>			
RUN			<i>30</i>			
POOL			<i>30</i>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<i>0</i> % Cobble	<i>5</i> % Gravel	<i>60</i> % Sand	<i>34</i> % Silt	<i>5</i> % Mud/Clay	<i>0</i> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

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Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muendes Date of Survey: 5/21/07

Organization: MEC Water Resources Position: Water Quality Scientist

AWC 5-23-07
OK 5/25/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>655</u>		Site #: <u>6</u> <small>(WBID_Site#)</small>	Date: <u>5/21/07</u>		Dissolved Oxygen Time: <u>1430</u>
Estimated Channel Incision: <u>0.30</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: <u>0503622</u> UTM Y: <u>4475317</u>					
Horizontal Accuracy Estimate (GPS Data Quality): +/- <u>110</u> (feet)			Dissolved Oxygen: <u>9.78</u> (mg/L)		
Average Stream Width: <u>5</u> (meters)	Length of Survey Segment: <u>150</u> (meters) <small>(20x average stream width)</small>		Dissolved Oxygen: <u>120.6</u> (% sat)		
Field Staff: <u>Nick Muenks Jarrod Roberts</u>			Specific Cond: <u>597</u> ($\mu\text{S/cm}$)		
			Water Temperature: <u>25.9</u> ($^{\circ}\text{C}$)		

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.00	0.11	0.20	0.10	0.20	0.10	0.30	0.12	1.00	0.10	0.50	0.10	0.40	0.10	1.30	0.10	1.30	0.12	0.00	<0.10	0.00	<0.10
2	0.50	0.29	0.30	0.12	0.74	0.50	0.76	0.49	1.10	0.10	0.90	0.12	0.64	<0.10	1.49	<0.10	1.45	0.11	0.50	<0.10	0.34	<0.10
3	1.00	0.43	0.40	0.14	1.28	0.55	1.22	0.49	1.20	0.11	1.30	<0.10	0.88	0.10	1.68	0.11	1.60	0.11	1.00	<0.10	0.68	<0.10
4	1.50	0.52	0.50	0.13	1.82	0.58	1.68	0.45	1.30	0.11	1.70	<0.10	1.12	0.11	1.87	0.10	1.75	0.11	1.50	<0.10	1.02	<0.10
5	2.00	0.52	0.60	0.12	2.36	0.75	2.14	0.47	1.40	0.11	2.10	<0.10	1.36	<0.10	2.06	0.14	1.90	<0.10	2.00	<0.10	1.36	<0.10
6	2.50	0.50	0.70	0.11	2.90	0.65	2.60	0.53	1.50	0.12	2.50	<0.10	1.60	0.10	2.25	0.12	2.05	<0.10	2.50	<0.10	1.70	<0.10
7	3.00	0.53	0.80	0.12	3.44	0.57	3.06	0.50	1.60	0.14	2.90	<0.10	1.84	0.10	2.44	0.13	2.20	<0.10	3.00	<0.10	2.04	<0.10
8	3.50	0.48	0.90	0.12	3.98	0.40	3.52	0.43	1.70	0.15	3.30	0.10	2.08	0.10	2.63	0.11	2.35	<0.10	3.50	<0.10	2.38	<0.10
9	4.00	0.34	1.00	0.13	4.52	0.28	3.98	0.35	1.80	0.13	3.70	0.14	2.32	0.10	2.82	0.12	2.50	<0.10	4.00	0.00	2.72	<0.10
10	4.50	0.24	1.10	0.12	5.06	0.27	4.44	0.25	1.90	0.11	4.10	<0.10	2.56	0.11	3.01	0.11	2.65	<0.10	4.50	0.00	3.06	<0.10
11	5.00	0.12	1.20	0.10	5.60	0.13	4.90	0.13	2.00	0.11	4.50	0.10	2.80	0.12	3.20	0.12	2.80	0.11	5.00	<0.10	3.40	<0.10
12	5.10	0	1.40	0	5.90	0	5.20	0	3.00	0	5.20	0	3.60	0	3.60	0	4.10	0				
Feature Type (riffle, run, or pool)	10 pool		20 run		30 pool		30 pool		100 run		70 riffle		80 run		40 run		130 run		riffle		riffle	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muehl Date: 5/21/07

BY NC 5-23-07

QALC 5/25/07

WBID# 655
 Site# 7

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/21/07 1620</u>	Site Location Description (e.g., road crossing): <u>Site within Mineral Hills CA</u>
Personnel (Data Collectors): <u>Nick M., Jerrod R</u>	
Current Weather Conditions: <u>Clear</u>	Facility Name: <u>Unionville Country Club</u>
	Permit Number: <u>MO 0026646</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0504685</u>		Y: <u>4474096</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>26</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)
<u>655-7-779</u>	<u>Downstream transect 7</u>	<u>655-7-782</u>	<u>Upstream view transect 7</u>
<u>655-7-780</u>	<u>Downstream transect 7</u>		
<u>655-7-781</u>	<u>Upstream view transect 7</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input checked="" type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments:				

WBID# 655
Site# 7

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization
(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) <i>unc</i> % of site	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			10			
RUN			20			
POOL			70			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>2</u> % Cobble	<u>8</u> % Gravel	<u>70</u> % Sand	<u>15</u> % Silt	<u>5</u> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

none observed

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muent Date of Survey: 5/21/07

Organization: MEL Water Resources Position: Water Quality Scientist

Waterbody ID: <u>655</u> Site #: <u>7</u> (WBID_Site#)		Dissolved Oxygen Date: <u>5/21/07</u> Time: <u>16:20</u>	
Estimated Channel Incision: <u>0.36</u> (m) (height between low bank width and water)		Dissolved Oxygen: <u>7.55</u> (mg/L)	
GPS Location (taken at transect 1): UTM X: <u>0504685</u> UTM Y: <u>4474096</u>		Dissolved Oxygen: <u>88.9</u> (% sat)	
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 26.0</u> (feet)		Specific Cond: <u>598</u> (µS/cm)	
Average Stream Width: <u>5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (20x average stream width)		Water Temperature: <u>23.9</u> (°C)	
Field Staff: <u>Nick Muenks</u> <u>Jerrold Roberts</u>			

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muench Date: 5/21/07

AWC 5-23-07

AK 5/28/85

WBID# 0655



Site# 1 Photo ID# 655-1-757, Downstream



Site# 1 Photo ID# 655-1-758, Upstream



Site# 1 Photo ID# 655-1-759, Upstream



Site# 2 Photo ID# 655-2-760, Foot prints

WBID# 0655



Site# 2 Photo ID# 655-2-761, Downstream



Site# 2 Photo ID# 655-2-762, Downstream



Site# 2 Photo ID# 655-2-763, Upstream



Site# 3 Photo ID# 655-3-764 Downstream

WBID# 0655



Site# 3 Photo ID# 655-3-765, Upstream



Site# 4 Photo ID# 655-4-766, Foot prints



Site# 4 Photo ID# 655-4-767, Downstream



Site# 4 Photo ID# 655-4-768, Upstream

WBID# 0655



Site# 4 Photo ID# 655-4-769, Downstream



Site# 4 Photo ID# 655-4-770, Upstream



Site# 5 Photo ID# 655-5-771, Downstream



Site# 5 Photo ID# 655-5-772, Upstream

WBID# 0655



Site# 6 Photo ID# 655-6-773, Footprints



Site# 6 Photo ID# 655-6-774, Downstream



Site# 6 Photo ID# 655-6-775, Downstream



Site# 6 Photo ID# 655-6-776, Upstream

WBID# 0655



Site# 6 Photo ID# 655-6-777, Downstream



Site# 6 Photo ID# 655-6-778, Upstream



Site# 7 Photo ID# 655-7-779, Downstream



Site# 7 Photo ID# 655-7-781, Upstream

WBID# 0655



Site# 7 Photo ID# 655-7-782, Upstream